# EDIS⊙FT

DEFENCE & AEROSPACE TECHNOLOGIES

A **THALES** Group Company

# RTEMS by EDISOFT

8th ESA Workshop on Avionics, Data, Control and Software Systems - ADCSS 2014

Tuesday, 28th October 2014

EDISOFT

DEFENCE & AEROSPACE TECHNOLOGIES

# RTEMS by EDISOFT

- **Pre-Qualified RTEMS** (Real Time Executive for Multiprocessor Systems) **for Space Missions**
- **Development Assurance Level B** (Galileo Software Standards)
- **ERC32, LEON2** and **LEON3**
- RTEMS with **100% Statement Coverage** and **Decision Coverage** by the **TestSuite**
- RTEMS Complete **Documentation**
- **Safety Requirements Implemented**
- **Flying** in **Galileo FOC**
- RTEMS **Support Tools**

# RTEMS by EDISOFT Projects

**RTEMS CENTRE – Maintenance and Support CENTRE for RTEMS Operating System since 2006, contract number 20049/05/NL/JD/jk**

**RTEMS Improvement, contract number 21141/07/NL/JD**

**RTEMS LEON Upgrade, contract number 4000103825**

# RTEMS By EDISOFT Space Missions

- **Galileo FOC (launched in August 2014)**
- **SmallGEO**
- **Solar Orbiter**
- **Sentinel-2**
- Intermediate experimental Vehicle (**IXV**)
- **Earthcare**
- **EUCLID**

## Software IPR in relation with ESA

**Primary RTEMS license is GNU General Public License version 2 with the special exception that the application is not covered by the GNU General Public License**

**All IPR developed by EDISOFT remains vested in EDISOFT**

**EDISOFT is responsible for distributing the software within ESA Member States according to an "Open Source" license type**

**ESA is granted a separate free, world-wide standard license, including the right to grant sublicenses, use, copy and modify the software**
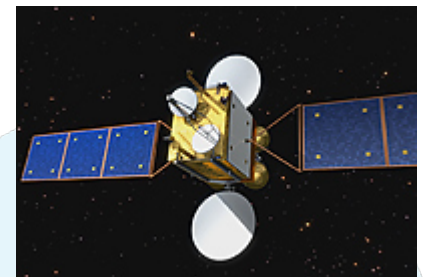
## OSS Approach

**RTEMS primary license is GPL**

**RTEMS Testsuite and Documentation (datapackage) are provided in separate license**

- License connected with Company and Project (e.g. OHB-Galileo FOC)
- Handling fee
- No Warranty, no liability and no corrections included

**RTEMS Support Tools are provided as GPL**

## Business Model

**ESA RTEMS Qualification Extensions**

**RTEMS Testsuite and Documentation Licenses**

**Helpdesk/Technical Support**

**Delta-Qualifications (Software Problems Corrections and Special Software Releases for Space Missions)**

**ESA Non-Member States Licenses**
- ESA Technology Transfer Board
- Portuguese Law for Export Control

**Direct Participation in the Space Missions**

# Application of OSS to Avionics

**Instruments**

- Energetic Particle Detectors
- Telescope for Imaging and Spectroscopy
- Near-Infrared Spectro Photometer
- Spectrometer  Telescope for Imaging X-rays

**On-Board Data Handling**

**Docking Mechanism**

**Integrated Modular Avionics**

# OBRIGADO / THANK YOU

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